Mathematics Toolkit: Grade 5 Objective 3.B.2.a

Standard 3.0 Knowledge of Measurement

Topic B. Measurement Tools

Indicator 2. Measure angles

Objective a. Measure a single angle and angles in regular polygons

Assessment Limits:

Measure an angle between 0 and 180 to the nearest degree

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Objective 3.B.2.a Tools

Lesson Seeds

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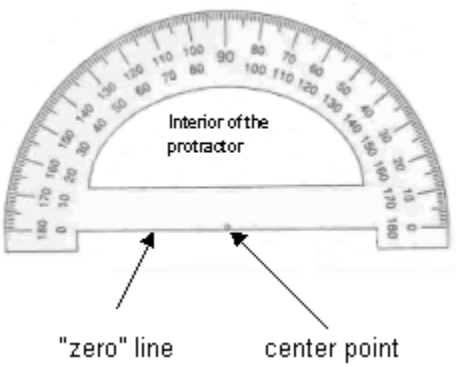
Materials needed

To do the following activities, make sure students are familiar with a protractor and its parts:



Note: Sometimes the "zero" line will run beneath the center point, creating the bottom edge of the protractor. Otherwise, there will be cross hairs that run on either side of the center point.)

Activities

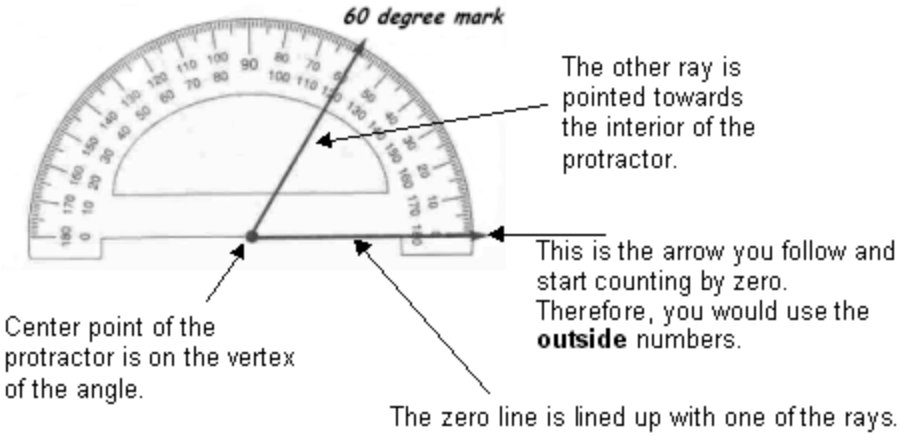
Measuring Together

Provide students different angles to practice measuring. Model (or allow a student to model) the correct way to measure an angle, using the overhead. Make sure you repeat the steps aloud as you demonstrate them.

Steps:

- Put the center point of the protractor on the vertex of the angle.
- Line up the zero line with one of the rays of the angle while making sure the other ray is pointing towards the interior of the protractor.
- Identify the angle as acute, obtuse, or right before measuring.
- Determine the angle's measure.
  Tip: Some students get confused with which number to use when determining the measure. A rhyme that is helpful is, "Follow the arrow and start counting from zero." (The arrow is the ray that is lined up with the zero line.)
- Check the measurement against the angle type. If it is acute, is your measurement between 0° and 90°? If it is obtuse, is your measurement between 90° and 180°?
- After you have modeled measuring an angle a few times, have students continue measuring angles on their own as you assess their understanding and re-direct as needed.

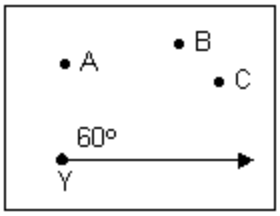
Example:
Here is an illustration that goes along with the steps to measuring an angle. This angle measures 60 degrees



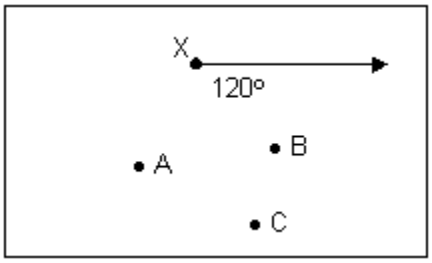
Guess the Point

Draw a ray and then place several points above it. Write a pre-determined measurement under the ray. Students will predict and then determine which point, when connected to the ray's endpoint will create an angle with the given measurement.

Examples:



Which ray, $\overrightarrow{YA}$, $\overrightarrow{YB}$, or $\overrightarrow{YC}$, will make an angle that measures 60°?



Which ray, $\overrightarrow{XA}$, $\overrightarrow{XB}$, or $\overrightarrow{XC}$, will make an angle that measures 120°?

Sample Item #1 - Selected Response (SR) Item

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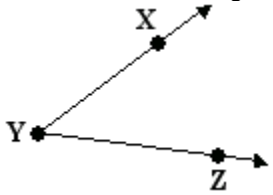
Paul drew the angle shown below.



What is the measure, in degrees, of the angle Paul has drawn?

A. 36°
B. 44°
C. 134°
D. 136°

Correct Answer:
B